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| 10/806,232 | 03/23/2004 | Bernd Bartenbach | 54395 | 9664 |

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| EXAMINER | |
|---|---|
| BOYER, RANDY | |
| ART UNIT | PAPER NUMBER |
| 1764 | |

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
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| 3 MONTHS | 01/09/2007 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/806,232 | BARTENBACH ET AL. | |
| | Examiner | Art Unit | |
| | Randy Boyer | 1764 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *23 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☒ Claim(s) *7,14-16 and 18* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *23 March 2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Objections*

1. Claim 7 is objected to for improper use of the plural form. As submitted, claim 7 reads "A reactor as claimed in claims 3, . . .". Examiner suggests correction by amending the claim to read "A reactor as claimed in claim 3, . . .". Appropriate correction is required.

2. Claims 14-16, and 18 are objected to for lack of antecedent basis. All of these claims are dependent on independent claim 3 and recite the limitation "the fire-resistant ceramic." There is insufficient antecedent basis in claim 3 for such limitation. Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claim 19 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Claim 19 provides for the use of "the process as claimed in claim 1" or "the reactor as claimed in claim 3", but, since claims 1 and 3 do not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim 19 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd.* v. *Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-13, and 19-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Gravley (US 4765964).

9. With respect to claim 1, Gravley discloses a process for the scale-up of a reactor having a supply of a reaction mixture via channels of a burner block to a reaction chamber (column 3, lines 15-16), a high temperature reaction having a short residence time taking place in the reaction chamber (column 7, lines 56-60) and the reaction

mixture subsequently being rapidly cooled in a quench area (column 6, lines 37-39), characterized in that for a throughput enlargement the internal diameter of the reactor is enlarged (see Table I, runs 8 and 9), the transition from the reaction chamber to the quench area being designed in the form of a gap (see Figure) which is restricted to a width in the range from 2 to 200 mm (column 6, lines 31-34, and column 10, line 39).

10. With respect to claim 2, Gravley discloses a transition of the reaction chamber to the quench area restricted to a gap having a width in the range from 50 to 150 mm (column 6, lines 31-34, and column 10, line 39).

11. With respect to claim 3, Gravley discloses a reactor having a supply of a reaction mixture via channels of a burner block to a reaction chamber (column 3, lines 15-16), a high temperature reaction having a short residence time taking place in the reaction chamber (column 7, lines 56-60) and the reaction mixture subsequently being rapidly cooled in a quench area (column 6, lines 37-39), characterized in that the transition of the reaction chamber to the quench area is designed in the form of an annular gap (see Figure).

12. With respect to claim 4, Gravley discloses an annular gap restricted to a width in the range from 2 to 200 mm (column 6, lines 31-34, and column 10, line 39).

13. With respect to claim 5, Gravley discloses a reaction chamber designed in the form of an annular gap (see Figure).

14. With respect to claims 6 and 7, Gravley discloses channels of the burner block aligned in the longitudinal axis of the reaction chamber (23).

15. With respect to claim 8, Gravley discloses the quench area constructed aligned in the direction of the longitudinal axis of the reaction chamber (see Figure).

16. With respect to claim 9, Gravley discloses rapid cooling of the reaction mixture in the quench area brought about by direct or indirect quenching (column 6, lines 37-39).

17. With respect to claim 10, Gravley discloses direct quenching brought about by single or multistage mixing of a cooling medium into the reaction mixture (column 6, lines 37-56).

18. With respect to claims 11, Gravley discloses direct quenching brought about by direct mixing of cooling medium into the quench area designed like an annular gap from outside (see Figure).

19. With respect to claim 12, Gravley discloses direct quenching brought about by introducing a cooling medium via quench nozzles arranged radially or tangentially to the main flow direction of the reaction mixture in the reactor (see Figure).

20. With respect to claim 13, Gravley discloses wherein all surfaces restricting the reaction chamber are formed of a fire-resistant ceramic having an alumina content of at least 80% by weight (column 5, lines 49-53).

21. With respect to claim 19, acetylene is a known product of the partial combustion of methane with oxygen. Thus, Gravley provides an inherent disclosure for a method for the preparation of acetylene by partial oxidation of hydrocarbons using oxygen.

22. With respect to claim 20, Gravley discloses wherein the annular gap is restricted to a width in the range from 50 to 150 mm (column 6, lines 31-34, and column 10, line 39).

23. With respect to claim 21, Gravley discloses wherein a quench area is constructed as a gap (see Figure).

24. With respect to claim 22, Gravley discloses wherein the gap has an annular shape (see Figure).

***Claim Rejections - 35 USC § 103***

25. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

26. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

27. Claim 23 is rejected under 35 U.S.C. 103(a) as being upatentable over Gravley (US 4765964), or alternatively over Gravley in view of Kuehner (US 5188806).

28. With respect to claim 23, Gravley discloses a reactor having a supply of a reaction mixture via channels of a burner block to a reaction chamber (column 3, lines 15-16), a high temperature reaction having a short residence time taking place in the reaction chamber (column 7, lines 56-60) and the reaction mixture subsequently being rapidly cooled in a quench area (column 6, lines 37-39), characterized in that the transition of the reaction chamber to the quench area is designed in the form of an annular gap (see Figure); an annular gap restricted to a width in the range from 2 to 200 mm (column 6, lines 31-34, and column 10, line 39); and direct quenching brought about by single or multistage mixing of a cooling medium into the reaction mixture (column 6, lines 37-56).

Gravley does not disclose direct quenching brought about by single or multistage mixing of a cooling medium into the reaction mixture via one or more annular distributors.

However, direct quenching via annular distributors is known in the art (see e.g., Kuehner (US 5188806), column 3, lines 66-68, and column 4, lines 1-7).

Therefore, it would have been obvious to the person having ordinary skill in the art at the time the invention was made to provide direct quenching of the reaction mixture by means of an annular distributor.

29. Claims 14-18, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gravley (US 4765964) in view of Bakker (US 3640739).

30. With respect to claims 14 and 15, Gravley discloses a reactor having a supply of a reaction mixture via channels of a burner block to a reaction chamber (see Gravley, column 3, lines 15-16), a high temperature reaction having a short residence time taking place in the reaction chamber (see Gravley, column 7, lines 56-60) and the reaction mixture subsequently being rapidly cooled in a quench area (see Gravley, column 6, lines 37-39), characterized in that the transition of the reaction chamber to the quench area is designed in the form of an annular gap (see Gravley, Figure).

Gravley does not disclose a reactor characterized in that the alumina content of the fire-resistant ceramic is at least 95% by weight.

However, Bakker discloses a refractory material made from a high purity alumina refractory brick batch mix consisting of 85% – 95% alumina by weight (see Bakker, column 2, lines 10-12). Bakker discloses that the refractories of his invention are of increased strength, higher density, lower porosity, and higher refractoriness than other refractories commercially available (see Bakker, column 1, lines 62-67).

Therefore it would have been obvious to the person having ordinary skill in the art at the time the invention was made to incorporate the refractory of Bakker into the reactor of Gravley so as to provide for a more durable refractory sufficient for use under high reaction temperatures.

31. With respect to claims 16 and 17, Bakker discloses a fire-resistant ceramic shaped into bricks, compressed, dried, and calcined (see Bakker, column 3, lines 58-70).

32. With respect to claims 18 and 24, Bakker discloses pressing the refractory mix into any desired shape (see Bakker, column 3, lines 58-59).

***Double Patenting***

33. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory

double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

34. Claims 3, 13-19, and 24 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-7 of Bartenbach (US 6869279). Although the conflicting claims are not identical, they are not patentably distinct from each other because both recite the same reactor device.

Examiner notes that claim 1 of the '279 patent does not recite the limitation of claim 3 of the present application, namely a reactor "characterized in that the transition of the reaction chamber to the quench area is designed in the form of an annular gap." However, the person having ordinary skill in the art would recognize that such a gap is necessarily present in the reactor of the '279 patent, since there must be some separation of space (i.e. a "gap") between the reaction zone and quench zone. Moreover, such gap would necessarily be "annular" in shape given the reactor design disclosed in the '279 patent. Such being the case, the aforementioned claims of the present application are not patentably distinct over those of the '279 patent.

***Conclusion***

35. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Randy Boyer whose telephone number is (571) 272-7113. The examiner can normally be reached Monday through Friday from 8:00 A.M. to 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola, can be reached at (571) 272-1444. The fax number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RPB

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